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THE HEALTH OF MINORITIES IN NORTH CAROLINA

by

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ABSTRACT

Using an array of health indicators on pregnancy, mortality and morbidity, this study depicts the health status and health habits of minorities in North Carolina relative to whites over the past 10 years. Compared to a decade ago, minorities are living longer and are healthier. Rates of infant and fetal death, pregnancy (including teenage pregnancy), inadequate prenatal care, and general mortality have declined substantially. But relative to whites, minorities continue to suffer illness and death disproportionately and this disproportionate suffering has not been appreciably altered in the past decade. This suffering is an even greater problem among younger than older minorities. The major contributors to the disproportionality are unintended pregnancies, infant deaths, hypertension, diabetes, homicides, cancer (particularly prostate, stomach, cervical, and lung cancers), accidents except motor vehicle, cerebrovascular disease, nephritis/nephrosis, and chronic liver disease/cirrhosis. The causes of the health differentials appear to be multifactorial and are embedded in a complex interaction of socioeconomic, health and other factors that is poorly understood for the general population and even less so for minorities. Minimizing the longstanding disparities will require creative thinking by the public health community.

INTRODUCTION

"Despite the unprecedented explosion in scientific knowledge and the phenomenal capacity of medicine to diagnose, treat and cure disease, Blacks and other minorities have not benefited fully or equitably from the fruits of science or from those systems responsible for translating and using health sciences technology." "Persistent and significant health disparities exist for minority Americans, requiring efforts of monumental proportions to bring their health to the level of all Americans." These findings are articulated in REPORT OF THE SECRETARY'S TASK FORCE ON BLACK AND MINORITY HEALTH which documents the continuing disparities in key health indicators among certain groups of the U.S. population. (1)

As evidenced by recent inquiries to the State Center for Health Statistics about the health status of minority North Carolinians, the Report has raised concern about racial disparities in this state. One quick measure which is suggestive of significant disparities in North Carolina is life expectancy, a measure which summarizes the overall differences in the level of mortality among various groups. Minority females born in 1980 had a life expectancy at birth 5.1 years less than that for white females. In 1940 the difference was 10.9 years. Minority males had a life expectancy at birth 6.3 years less than that for white males in 1980, but 8.8 years less in 1940. While improvements have been made, minorities of both sexes still have life expectancies that were reached by whites prior to the mid-1950's, a lag of about 30 years.

The lags in life expectancy raise questions about the health of minorities relative to whites. Specifically, to what extent are there disparities in health between whites and minorities, what have been the trends in those disparities in the past decade, and what are the specific problems and conditions for which the greatest disparities exist? These and other questions are examined in this paper through a comparative analysis of key statistical indicators of the health of minority and white North Carolinians.

METHODS

The method of study is descriptive using statistical indicators on pregnancy, morbidity, and mortality for North Carolina residents. The primary objective of this study is to measure the racial gaps in these indicators and the trends in those gaps in the recent past. The ratio of the minority-to-white rates or proportions was used as the index of disparity or gap. A ratio greater than 1.0 indicates that the rate is higher for minority North Carolinians than for whites; a value of less than 1.0 indicates that minorities have a lower rate than whites. The change in this ratio over time indicates whether or not the gap has widened or narrowed.

For the mortality data, race-sex-specific mortality rates age-adjusted by the direct method were used to calculate the ratio. A ratio comparison of two age-adjusted rates is called a risk ratio or relative risk (2). A high relative risk for a specific cause of death may not be of great "public health significance" if the cause affects a small number of people. For some causes by race-sex group, small numbers result in an unstable rate if 1-year numbers are used. To minimize this potential problem, only 5-year numbers are used to calculate the age-adjusted rates. Ratios based on less than 20 events are marked by an asterisk in a table.

Race ratios were calculated using all deaths (RR) and all deaths prior to age 45 (RRY). The latter ratios were used to assess risk differentials for younger minorities versus younger whites. Ratios were calculated for total deaths and specific causes.

SOCIAL AND ECONOMIC CHARACTERISTICS OF MINORITIES

One of the most enduring of relationships has been the association between socioeconomic status and health status. Whether socioeconomic status is measured by education, income, occupation, or a composite index, and whether health status is measured by mortality, morbidity, or perceived health status, higher socioeconomic status has repeatedly been shown to be associated with better health status (3-6).

The 1980 Census indicates that one out of every four persons in North Carolina is a member of a minority group, for a total of approximately 1.4 million persons. Blacks constitute the largest minority group (about 22% of the total population), with American Indians a distant second (1%). The large black population makes North Carolina one of only 5 states in which blacks constitute more than one-fifth of the population. Only 6 states had a higher number of blacks in 1980. Furthermore, a large Indian population ranks the state fifth in the number of native Americans (7).

Between 1970 and 1980 the number of minorities recorded by the Census increased by 20% while the number of whites increased by 14%. This pattern of more rapid growth for minorities is expected to continue to the year 2000. Minorities are projected to increase to 1,715,600 (26.4% of the total population) by 1990 and to 1,954,600 (27.9%) by the turn of the century.

In addition to growing faster, minority North Carolinians are on the average younger than whites. The median age of blacks in 1980 was 24.7 years and for Indians, 23.1 years (Table 1). Whites on the other hand were about 7 years older than either group. While the median age has increased for both whites and blacks, the age disparity has actually widened at each census year since 1920, with the exception of between 1970 and 1980 when the gap declined from 7.0 to 6.7 years. Blacks now have a median age reached by whites in the 1940's.

The earnings and income levels of blacks and Indians are substantially below those of whites. As Table 1 shows, of employed persons age 16+, median earnings for white males were about $12,000 compared to $8,000 for minority males, and $7,100 for white females compared to $6,000 for minority females. With these earning levels, only 10% of white persons but about 30% of minority persons were considered to be in poverty in 1979. Further, 20% of minority persons and 10% of white persons were 100-150% of the poverty level. Thus, one out of every two minority persons compared to one out of every five white persons lived below 150% of the poverty level, which in 1979 was set at $7,400 for a family of four.

In terms of family size and composition, minority families are generally larger and more likely to be headed by a female. The number of persons per family has declined for each racial group since 1970, but as shown in Table 1, the average family size is still higher for blacks (3.80) and Indians (3.88) than for whites (3.09). Further, over one-third of all black families and one-fifth of all Indian families but only one-tenth of all white families are headed by a female. On the average these families have a much greater chance of being in poverty, with minorities having a decidedly higher probability. As exhibited in Table 1, about 70% of all minority persons compared to 39% of all white persons in families with a female head lived below 150% of the poverty level. These economic differences are compounded by the fact that within female-headed families, a greater percentage of black families (21%) have children under age 18 compared to Indian (13%) or white (6%) families.

Altogether, the combination of the above socio-economic factors places minorities in an unfavorable position relative to whites. This unfavorable position puts added pressure on the social and health care systems to overcome these socioeconomic differentials in order to impact on the health disparities.

PREGNANCY AND INFANT HEALTH

Trends in Pregnancies

Defined as live births, fetal deaths, and legally induced abortions, pregnancy was selected as a key health statistics indicator because of the disproportionate adverse outcomes for mothers and children in minority and low socioeconomic groups. In 1985 there were 122,644 pregnancies to North Carolina residents, of which 67.2% were to whites and 32.8% to minorities. Table 2 shows the marked differentials in pregnancy rates by race between 1978 and 1985. The lower white rate has increased by 4.5% over the past 8 years, while the higher minority rate has declined 6.7%, thereby narrowing the racial gap from 52% higher for minorities than whites in 1978 to 36% higher in 1985.

The components of pregnancy have not all shown the same pattern. Tables 3 and 4 display trends in live birth and fertility rates by race. Using either rate, there has been a small rate increase for whites (about 2%), a large rate decrease for minorities (about 15%), and a reduction in the gap (about 16%). Still minorities continue to have higher birth and fertility rates. The higher fertility rates of minorities compared to whites suggest that their elevated birth rates reflect elevated childbearing as opposed to a higher proportion of women of childbearing age (8).

As shown in Table 5, the fetal death rates for both whites and minorities have declined considerably, with minorities declining at a much faster pace. Between 1978 and 1985, minorities experienced a 28% decline while whites experienced a 15% decline thereby narrowing the gap in death rates from 93% higher for minorities to 64% higher. Despite the disparity reduction from 1978 to 1985, the gap has fluctuated sharply each year since 1981 and the 1985 ratio was only 8.4% below the 1981 ratio.

Concerning abortions, both whites and minorities have experienced about a 15% increase in their rates (Table 6). These trends have meant a small change in the abortion rate gap, from being 71% higher for minorities in 1978 to being 74% higher in 1985. Of the three components of pregnancy, the largest racial disparity in 1985 occurred with abortions (ratio = 1.74 for abortions, 1.64 for fetal deaths, and 1.33 for live births).

Both whites and minorities are increasingly selecting abortion over childbearing once they become pregnant. The increased selection by minorities is particularly noteworthy since it dispels a common belief that minorities are **less** likely than whites to choose abortion as a pregnancy alternative. As evidenced by the abortion fraction which is the number of reported abortions per 1,000 reported pregnancies, minorities in 1985 were 19% more likely than their counterparts in 1978 to choose abortion over childbearing (Table 7). Whites in 1985 were only 2.8% more likely than their 1978 counterparts to choose abortion. Moreover, in 1978 minorities had an abortion fraction only 1.1 times that for whites. By 1985, their fraction was 1.3 times that for whites, a 16% increase in the disparity. The 1985 gap represents the third consecutive year that the disparity has widened to reach a new high.

Teenage Pregnancy

Of all health events, adolescent pregnancy is probably one of the most disturbing. Compared to women in their twenties, adolescents are at higher risk of various complications of pregnancy such as toxemia and prolonged labor and are more likely to deliver infants weighing under 2500 grams at birth (8). Low birthweight has been linked with increased mortality and with developmental problems

such as epilepsy, cerebral palsy, and mental retardation (9). In addition, the costs of adolescent pregnancies are much more likely to be borne through public monies. In 1985 for example, 30% of all hospital deliveries involving pregnant North Carolina teens were paid for by Medicaid. This compares to 10% of all deliveries to mothers over age 19.

While adolescent pregnancy is a significant social problem regardless of race and thereby deserves its recent heightened attention, it is a problem even more pronounced among minority than white teens. At least three factors support this finding. First, greater proportions of minority than white pregnancies occur to adolescents. Teenage pregnancies represented 17.3% of all white pregnancies in 1985 but 25.2% of all minority pregnancies. The proportions for both races have declined since 1978, but the gaps in the proportions have actually widened, from 41% higher for minorities in 1978 to 46% higher in 1985.

Secondly, only small gains have been made in narrowing the racial gaps in the teenage pregnancy rates. Between 1978 and 1985, the ratio of minority-to-white teen pregnancy rates declined by 5 percent (Table 8). However, almost all of this decline was achieved by 1980, as the minority rate has remained at least 60% higher than the white rate since then.

The third reason for teenage pregnancy being a more pronounced problem among minorities than whites is the disproportionate number of repeat pregnancies to minority teenagers. Since 1981 the SCHS has produced a report called Sentinel Health Events which contains selected events (i.e., causes of death, reported communicable diseases, and pregnancies) identified by state health officials as being the minimum set about which the health community should ask, "Why did they happen?" In this report the concern is with **each** event rather than the **rate** of events. One event included in this report is "unmarried teenagers having their second or higher-order pregnancy." In 1985, 1,228 unmarried teenagers under age 18 had a second or higher-order pregnancy. Of particular note here is that 68% of these events (840 total events) were to minority teenagers, the overwhelming majority of whom were black (98%). Unfortunately, neither the number of minority events nor the percentage are one-year aberrations as they have both been relatively constant since 1981.

Previously it was reported that minorities had a greater propensity than whites to choose abortion over childbearing. The only exception to this finding occurs among teenagers (i.e., persons 15-19 years of age). Each year since 1978, minority teenagers have had an abortion fraction lower than that for whites (Table 9). In 1985 their fraction was 18% below that for whites. However, this position may soon be reversed. The proportion of pregnant teenagers selecting abortion as the pregnancy alternative is increasing for both racial groups, but the minority proportion is increasing decidedly faster than that for whites. Between 1978 and 1985, while whites experienced a 15% increase in their fraction, minorities experienced a 39% increase. If no new or expanded public health initiatives alter the current rates of increase, the proportion of pregnant minority teenagers using abortion is projected to exceed that for whites within the next 7 years.

Risk Factors for Adverse Pregnancy Outcomes

Sociodemographic. A number of biomedical, demographic, and behavioral characteristics of the mother are risk factors for an adverse pregnancy outcome. Maternal age, marital status, educational level, and history of fetal or childhood loss, which are characteristics collected on the birth certificate, are all associated with pregnancy outcome (9,10). Table 10 summarizes these factors into one indicator by illustrating the percent of births with one or more high-risk factors by race and year. While whites have experienced small, though steady declines in the percent of births with one or more of the sociodemographic risk factors (5.3% decline), minorities have experienced virtually no change (0.4% decline), thereby increasing the disparity by 5%.

Prenatal Care. The importance of prenatal care to the future health status of the mother and infant has been convincingly demonstrated (9,10). It has been shown that those women who experience higher risks of complications of pregnancy and/or delivery (e.g., women who are black, teenage, older, high parity, unmarried) are less likely to receive adequate prenatal care (10). Moreover, women receiving inadequate care are at increased risk of having a low-birthweight infant. Low birthweight increases the risk of subsequent infant morbidity and mortality.

Using a Prenatal Care Index developed to take into account month of first visit, number of visits, and gestational age at delivery (11), Table 11 shows that minority women in 1978 were 3.2 times as likely as white women to receive inadequate prenatal care. Seven years later, minorities, even though experiencing a 22% percent decline, were still almost 3 times as likely as white women to receive inadequate care*.

This differential prevails even after controlling for education. As displayed in Table 12, while the percent inadequate declined with increasing levels of education (with college graduates of both races having decidedly lower percentages), the disparity actually increased. Among persons with less than 12 years of education, minorities had a percentage 1.8 times that for whites.

*The Index creates 3 prenatal care levels (i.e., adequate, intermediate, and inadequate). Using the combined intermediate and inadequate percentages by race rather than the inadequate percentages alone, minorities were twice as likely as whites to receive "less than adequate care," with the racial disparity in such care exhibiting little improvement since 1978 (ratio = 2.09 in 1985 and 2.16 in 1978).

Among persons with 16+ years of education, the minority percentage was 5 times that of whites. The increasing disparity was due to greater declines in inadequate care among whites than minorities at higher levels of education. Minorities who graduated from college had a percentage slightly **below** that for whites who only graduated from high school.

Birthweight. The primary health risk associated with infant loss is that of low birthweight. Whether it is because the infant is born too soon or too small, low birthweight is highly predictive of disability, illness or death (10). As shown in Table 13, larger percentages of minority than white infants are born with low birthweight (defined here as under 2500 grams). While improvement in the birthweight distribution has slowed in recent years for both races, minorities continue to have a low birthweight (LBW) rate twice that of whites. In fact, Table 14 shows that since 1978 the higher LBW rates for minorities prevail regardless of mother's education, with greater racial disparities occurring among the more-educated than less-educated mothers. With the exception of 1981, college-educated minorities have had since 1978 a LBW rate higher than that of whites with less than a high school education.

Smoking and Birthweight. Several studies have shown a clear impact of smoking on birthweight (1). Unfortunately, smoking is not an item collected on the birth certificate, although it may be collected on the new certificate to be used in 1988 or 1989. It is, however, an item collected on the Women, Infants, and Children (WIC) Program records and these records have been linked to the birth certificates. Among women on WIC in 1985, who comprised about 20% of the total birth population, self-reported smoking was almost twice as high among whites as among minorities (Table 15). These racial differences prevailed at each age interval as well, especially among teenagers.

Table 16 shows the percentage of low-weight births in each age-race-smoking category. Regardless of age or race, smokers were at least 1.34 times as likely as nonsmokers to have a low-weight birth. Further, within each smoking category minorities had a greater likelihood of having a low-weight baby irrespective of the age interval. However, with the exception of the 20-24 age group, nonsmoking minorities in 1985 were less likely to have a low-weight birth at each age interval than were whites who were smokers. In 1984, nonsmoking minorities of all ages combined had a smaller LBW percentage than whites who smoked.

Infant Mortality

The infant mortality rate has traditionally been used as an indicator of health status and as a measure of general living standards of a population (8). In fact, using infant mortality as a health status indicator has produced results remarkably close to those generated by far more complex formulas designed to measure an area's or a group's health (12).

During the seventies substantial improvements were made in reducing infant mortality, but it continues to be a major concern. North Carolina has traditionally ranked among the worst of all states. The 1985 provisional infant rate was exceeded by that of only 5 other states (13).

Within North Carolina's high infant mortality problem, minorities suffer disproportionately. As shown in Table 17, the infant mortality rate declined 51% for each racial group between 1970 and 1985, maintaining a minority-to-white ratio of about 1.85. In fact, the ratio has been at least 1.59 or higher every year since 1949.

The differentials in infant mortality are associated with a variety of factors including those related to the health of the mother before and during pregnancy, parental socioeconomic status, and lifestyle characteristics (1,9). Only a few of these risk factors are collected on either the birth or death certificate. To examine these risk factors and their differentials by race, linked birth and death certificate data (using the 1970 through 1984 birth cohorts) are analyzed in the remainder of this section. The focus is on the two components of infant mortality—neonatal and postneonatal deaths. In the 1980-84 period, neonatal deaths accounted for 68.2% of the state's infant deaths and postneonatal deaths accounted for 31.8%.

Neonatal Deaths. Neonatal mortality for minorities in 1980-84 was 13.1 deaths per 1,000 live births, 85% higher than the rate for whites (7.1). In successive 5-year intervals since 1970-74, neonatal mortality rates have declined steadily for both groups, but the gaps have actually widened from 55% higher for minorities in 1970-74, to 68% higher in 1975-79, and to 85% higher in 1980-84.

Table 18 shows that in the 1980-84 period neonatal mortality rate improved with increasing education for both race groups. Among whites, the rate declined steadily with increasing education, with the least-educated whites having a rate almost twice as high as the most-educated whites. For minorities, the rate also declined as education improved but not nearly as fast as for whites. The least-educated minorities had a rate only slightly higher than college-educated minorities (RR = 1.1).

Comparisons across race groups reveal at least two important findings. First, regardless of education, whites had a lower neonatal death rate in the 1980-84 period than minorities, a pattern also evident in the 1970-74 and 1975-79 periods. Second, the disparity in neonatal mortality actually widened with increasing education. Least-educated minorities had a 1980-84 mortality rate

41% higher than their white counterparts, while the most-educated minorities had a rate 130% higher than their white correspondents. Moreover, the risk of neonatal mortality for the most-educated minorities, who had the lowest **minority** neonatal death rate, was greater than the risk for the least-educated whites, who had the highest **white** neonatal death rate. This pattern was true for 1970-74 but not for 1975-79 when the rate for the most-educated minorities was 4% below that for the least-educated whites.

Birthweight is an important factor contributing to neonatal death (14). Table 19 shows birthweight-specific neonatal mortality rates by race in the 1980-84 period. As birthweight improved, the death rates dropped significantly for each race group, a pattern evident in the 1970-74 and 1975-79 periods as well. Further, for births in the under-2500 gram groups minorities had lower neonatal death rates in the 1980-84 period than did whites, a fact documented for previous years in other SCHS publications (15). However, in the past 10 years this favorable minority position has eroded in the under-2500 gram groups, especially in the lowest gram group. Among births under 1500 grams, the rate has narrowed from 11% lower for minorities than whites in 1970-74 to 5% lower in 1980-84 while for births between 1500-2499 grams, the rate has changed from 39% lower in 1970-74 to 35% lower in 1980-84. For births of 2500 grams or more, there has also been a reduction in the gap although in a favorable direction for minorities. In the 1970-74 period, the rate was 21% higher for minorities, declining to 16% higher in 1975-79, and to 5% higher in 1980-84.

Despite the lower birthweight-specific neonatal death rates, minorities continue to have overall neonatal death rates almost twice those for whites. Buescher (14) shows that the higher overall neonatal death rate for minorities is due to lower minority birthweights. Compared to a white percent of 6.1, the percent of minority births under 2500 grams was nearly twice as high at 12.0 in the 1980-84 period. For births under 1500 grams, where neonatal mortality is especially high, the minority percent was almost two and one half times the white percent. If minority births had the same weight distribution as whites in 1980-84, the minority neonatal rate would have been 6.2 deaths per 1,000 live births compared to 7.1 for whites, assuming no change in the weight-specific death rates. At the rate of 6.2 as opposed to the actual rate of 13.1, about 900 fewer minority neonatal deaths would have occurred in the 5-year period.

Tables 20 and 21 display neonatal mortality rates and ratios by education and birthweight. These data are summarized below:

- Within most birthweight and education groups, both whites and minorities exhibited steady declines in their neonatal mortality rates from the 1970-74 to the 1980-84 periods.
- For the under-2500 gram groups, minorities in most education groups experienced lower neonatal death rates. The exceptions were the 13-15 and 16+ education groups for births under 1500 grams, where whites for the first time in 1980-84 experienced a **lower** mortality rate than minorities.
- For each 5-year period, no consistent patterns of neonatal mortality for the under-1500 and 1500-2499 gram groups are exhibited for either race group as education improved, suggesting that the neonatal mortality due to low birthweight overwhelms the effect of education.
- For the 2500 or more gram group, race ratios for each education group have fluctuated since the 1970-74 period. During 1980-84, minorities with the least education had lower neonatal mortality rates than their white counterparts. Within the 16+ minority group, rates are based on small numbers of events. Examining infant instead of neonatal deaths, minority and white infants who weighed 2500 grams or more at birth and who were born to mothers with at least 16 years of education had comparable mortality rates in the 1980-84 period (2.7 versus 2.8). However, 1980-84 was the first period that minorities had a comparable rate, as it was 58% higher than whites in the 1970-74 period and 23% higher in the 1975-79 period.

Postneonatal Deaths. Postneonatal mortality is considered to be more reflective of living conditions, quality of care for children, and medical care for treatable conditions such as infections (1). As infant deaths have declined, the contribution of deaths during the postneonatal period to overall infant mortality has been systematically increasing. In the 1970-74 period, postneonatal deaths accounted for 25.8% of all infant deaths, increasing to 28.6% in the 1975-79 period, and to 31.8% in the 1980-84 period.

Table 22 displays postneonatal mortality rates by education level, race, and year. It is interesting to note that there has been a 27% decline in the gap (RR = 2.6 in 1970-74 and 1.9 in 1980-84) due primarily to a 37% reduction in the minority rate. The narrowing of racial gaps has occurred in all education groups except 13-15 where neither race has improved.

As with neonatal deaths, birthweight is an important factor in the analysis of postneonatal mortality. For both whites and minorities, Table 23 shows that in each 5-year interval infants who survived the first month of life had a greater risk of dying if they weighed under 2500 grams. Further, in the under-2500 gram groups, minorities had a greater risk of postneonatal death than whites, but the excess risk in the 1500-2499 group was only 10% in 1980-84.

In contrast, the postneonatal mortality rate for births under 1500 grams has increased steadily for both whites (60%) and minorities (33%). These differential increases have narrowed the gap from 50% higher for minorities in the 1970-74 period to 24% higher in the 1980-84 period. The increasing postneonatal mortality rate for both groups may be the result of more low-weight babies surviving the neonatal period because of improved medical technology, only to die in the postneonatal period.

While the rates are highest among the under-2500 gram groups, most postneonatal deaths occur to infants weighing 2500 grams or more at birth. For this weight group, the risk of death is greater in the postneonatal than neonatal period. The 1980-84 risk was 25% higher for whites and 110% higher for minorities in the postneonatal versus the neonatal period.

Causes of Infant Deaths. Tables 24 and 25 display the numbers of deaths and death rates for leading causes of mortality in the neonatal and postneonatal periods. In both periods the top three causes of mortality for both whites and minorities were conditions originating in the perinatal period, congenital anomalies, and sudden infant death syndrome (SIDS). Of these, minorities compared to whites had excessive infant loss in both periods from SIDS (RR = 1.52 in neonatal period and 2.01 in postneonatal period) and from conditions originating in the perinatal period (RR = 2.30 and 2.42, respectively). Among the other causes with at least 20 events for each race group, minorities were at least twice as likely as whites to suffer a postneonatal loss from accidents (RR = 2.19), infectious/parasitic diseases (RR = 2.44), and heart disease (RR = 2.25).

MORTALITY

This section concerns total and cause-specific mortality in the population at large including infants but excluding fetal deaths. In 1985 North Carolina's total unadjusted death rate was 8.48 deaths per 1,000 population; 53,018 residents died. The 1985 rate was 3% above the 1984 rate but well below the peak rates of 9.1 experienced in 1972 and 1973. North Carolina's crude death rate still remains below the U.S. death rate, however, with the provisional U.S. rate for 1985 at 8.7 per 1,000 population (13). The state's 1985 white rate was 8.56 compared to 8.23 for minorities.

Crude death rates are useful in assessing levels of health care needs, but the actual "force of mortality" or the risks of mortality are sometimes best described by rates that are adjusted for age, race, sex, and/or other external factors that cause one group's level of mortality to differ from another's. For example, one explanation of the minority's relatively favorable crude death rate is that they are younger than whites. Once the age differences are taken into account, it is found that minorities are experiencing higher mortality rates.

The most interesting differences in mortality risk are found when comparing race-sex groups. In the 1981-85 period, minority males had the highest age-adjusted mortality rate (1024 per 100,000 population), followed by white males (732), minority females (553), and white females (381). The rates for each race-sex group declined between 1974-78 and 1981-85, the declines ranging from a high of 15% for minority females to 8% for white females. Yet the racial gap actually increased for each sex group. Minority males, whose rate was 30% higher than that of white males in the 1974-78 period, now have a rate 40% higher. Minority females, with a 1974-78 rate 34% higher than that of white females, now have a rate 45% higher. On the other hand, the sex gap decreased for each race group, with the minority male rate dropping from 97% to 85% higher than the minority female rate and the white male rate narrowing from 102% to 92% higher than the white female rate.

Causes associated with the elevated mortality risk for minority males are exhibited in Table 26. Of the 25 cause categories commonly used to display the state's leading causes of mortality (16), the age-adjusted rates for minority males **exceeded** those of the other race-sex groups in 18 categories. Sixteen of these 18 cause-specific minority male rates exceeded the **next highest race-sex rate** by at least 12% and 12 exceeded the **next highest race-sex rate** by at least 30%. For two causes (stomach and prostate cancers), the minority male rates were at least 152% higher than the next highest rate while for homicides the minority male rate was about 285% higher. Similar levels of excess minority male mortality appear to have existed in the 1974-78 period.

For three causes, minority females had the highest of the race-sex rates in the 1981-85 period. These were cervical cancer (190% higher than the next highest rate), diabetes (16% higher), and female breast cancer (10% higher). White males had the highest rates for suicide (128% higher), chronic obstructive pulmonary disease (34% higher), and acute myocardial infarction (19% higher). White females had the highest rate for ovarian cancer (20% excess).

For five of the 25 cause categories—cerebrovascular disease, diabetes, hypertension, homicide, and nephritis/nephrosis—minorities had the two highest race-sex specific rates. For these 5 causes, the sex-specific minority rates were at least 1.8 times the comparable white rates. Hypertension exhibited the greatest risk differentials (RR = 3.7 for males and 4.0 for females), followed closely by homicide (RR = 4.2 and 3.2, respectively), and nephritis/nephrosis (RR = 2.7 and 3.1, respectively). All 5 causes were among the causes with the greatest race-sex disparities in the 1974-78 period.

Excess mortality appears to be an even greater problem among younger than older minorities of both sexes. Table 27 displays the 1981-85 cause-specific race ratios for each sex group for deaths prior to age 45 and deaths at all ages. Among deaths prior to age 45, minority males exhibited an 81% higher risk of mortality than white males; but for all ages, they exhibited only a 40% higher risk. For females under 45, minorities had a rate 75% higher than that of whites; but for all ages, the female minority rate was only 45% higher.

The most interesting variations by cause, race-sex, and age are summarized below:

- The 5 leading causes of mortality prior to age 45 for minority males were motor vehicle accidents, homicide, all other accidents, heart disease, and total cancer. For minority females they were total cancer (female breast was the leading cancer cause), heart disease, homicide, motor vehicle, and all other accidents.
- Of the 25 cause categories for deaths prior to age 45, minority males or females had the highest race-sex-specific rate for 21. The exceptions were atherosclerosis, ovarian cancer, colon/rectum/anus cancer, and suicide.
- Of the causes with the highest race ratios in the under-45 age group, eight ranked in the top ten for both males and females. These were hypertension, cerebrovascular disease, pneumonia/influenza, homicide, chronic obstructive pulmonary disease, stomach cancer, chronic liver disease/cirrhosis, and heart disease.
- For nine of the 25 causes examined, both the male and female race ratios for decedents under age 45 exceeded the ratios for all ages by at least 48%, illustrating an excessive risk for minorities at younger ages. These causes were hypertension, cerebrovascular disease, lung cancer, pneumonia/influenza, chronic obstructive pulmonary disease, chronic liver disease/cirrhosis, total heart disease, acute myocardial infarction, and other ischemic heart disease.

MORBIDITY

Because mortality is easy to ascertain, it has continued to be the most reliable single indicator of health conditions (9). Mortality statistics, however, have the limitation of being indicative of only a fraction of the morbidity in a population. Since deaths may occur in the absence of lengthy morbidity, and many disabilities of long duration do not result in death, morbidity and disability measures should be used in addition to mortality measures to describe the health status and the health differentials of a population more fully.

Yet, the lack of good morbidity reporting systems precludes us from having accurate information on the prevalence and incidence of various illnesses and disabilities. Still, while the "true" incidence/prevalence for many diseases may never be known, there do exist three computerized data systems that provide some measures and comparisons. The first is the North Carolina Citizen Survey (NCCS), a statewide survey conducted at least annually since 1975 by the North Carolina Office of State Budget and Management. Each fall the survey includes a number of questions on the health status of the state's citizens. The second is the Behavioral Risk Factor Surveillance (BRFS) Survey conducted by the Adult Health Services Section in the N.C. Division of Health Services. That survey collects information on lifestyle behaviors that contribute to the ten leading causes of premature death and disability. The third is the Communicable Disease Reporting System, a system for the reporting of specified communicable diseases.

Health Status. Self-assessed health status has been found to be highly correlated with actual health status and with utilization of health services (17). In the Fall 1985 NCCS, eight out of 10 North Carolinians reported their general health status to be good, very good, or excellent, with more than one quarter (26%) falling in the excellent category. Respondents who were younger, white, better educated, or from households with higher incomes were more likely to rate their general health as very good or excellent. In 1985 about 25% of minorities compared to 17% of whites rated their health as fair or poor. In 1984, the percentages were 30% for minorities and 14% for whites. The 1985 race-specific distributions of the self-assessments are depicted to Figure 1.

Chronic Diseases. The NCCS includes a comprehensive battery of questions concerning diagnosed diseases. Of these, arthritis and high blood pressure were the most commonly reported chronic diseases, each being mentioned by over one in five adults. Compared to whites, minorities had a higher percentage for both diseases, with the largest racial disparity being in the reporting of high blood pressure (about 11 percentage points difference). In 1984 there was a difference of 18 percentage points due to a higher percentage for minorities. Of the seven remaining conditions included in the survey, minorities had higher self-reported percentages for only three—diabetes, stroke, and glaucoma. Altogether, about 48% of minorities compared to 42% of whites had one or more of the 9 diagnosed diseases. Race-specific percentages for the various diseases are depicted in Figure 2.

The BRFS Survey includes only one question on a diagnosed disease—hypertension (i.e., diagnosed defined as told more than once, currently taking medication, or blood pressure still high). About 29% of minorities versus 15% of whites reported that they had hypertension

FIGURE 1

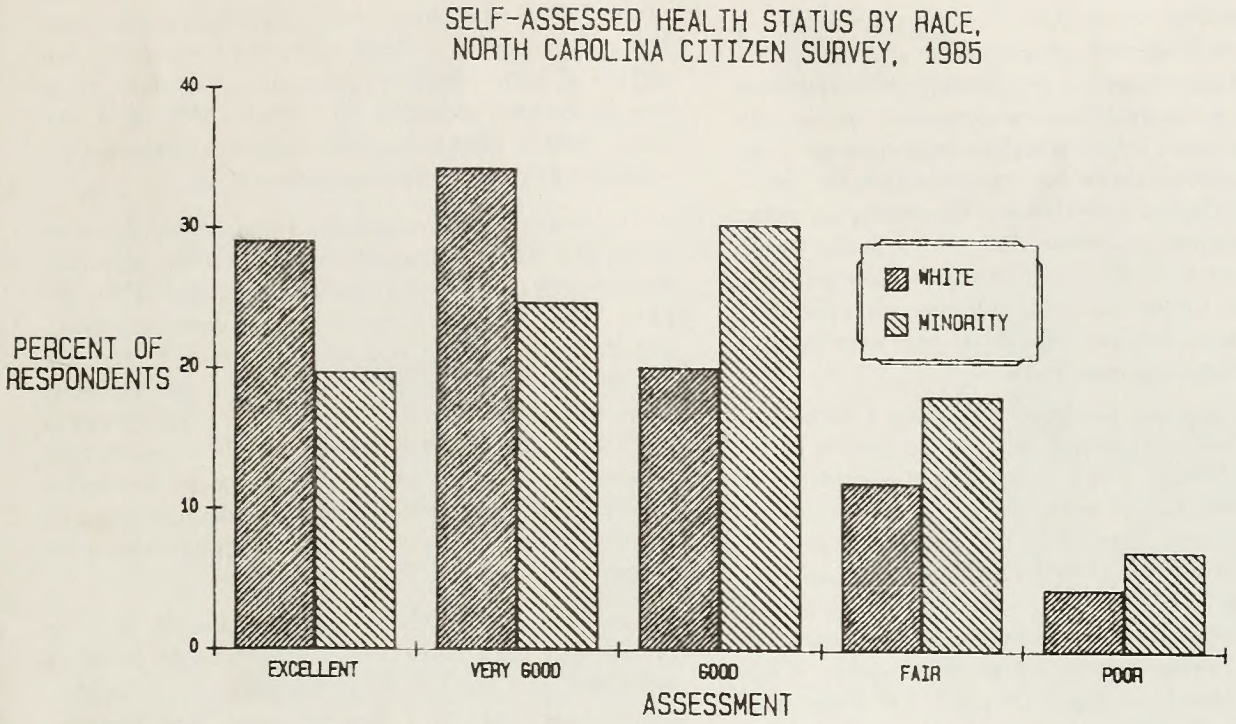
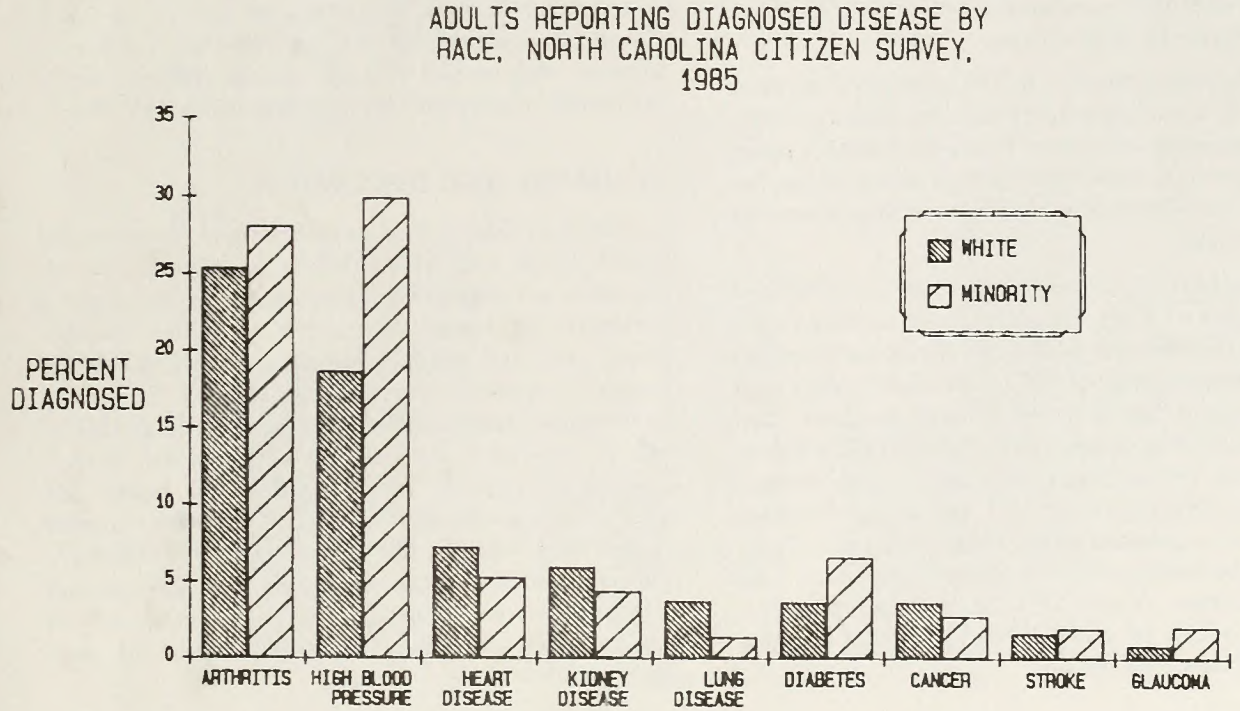


FIGURE 2



(Figure 3). Minority females, who had the highest percentage, were over twice as likely as white females to report having hypertension.

CommunicableDiseases. Table 28 shows the number and rate of selected reported communicable diseases by race. Some of the more notable differentials in rates of reported cases involve venereal diseases: gonorrhea and syphilis rates were at least 17 times as high for minorities as whites, and nonspecific urethritis was 7 times as high. Part of the reason for the higher veneral disease rate among minorities is better reporting of these diseases by public health clinics, where minorities are more likely than whites to receive care. Other communicable diseases with 1985 minority rates at least twice the white rates were hepatitis B and pneumococcus meningitis.

Acquired immune deficiency syndrome (AIDS) is a "NEW" disease, first required to be reported in North Carolina in January 1984. Nationally, the incidence of AIDS is rising for all racial groups, but the minority increase has been three times the white increase (18). While small numbers of North Carolina AIDS cases [171 as of January 5, 1987 (19)] precludes the calculation of reliable incidence rates over time, some interesting racial differences prevail among the reported cases. While whites comprised the largest proportion of these cases (55%), minorities represented a larger share of the AIDS population (45%) than of the total North Carolina population (23%). One factor contributing to the elevated incidence of AIDS among minorities has been intravenous (IV) drug use. Minorities comprised approximately 26% of the reported AIDS cases who were homosexual, but 87% of all cases who were IV drug users. About 29% of all minorities with AIDS compared to only 11% of all whites with AIDS were IV drug abusers.

Risk/Prevention Behaviors. In 1985 **obesity** (i.e., at or above 120% of median weight) was a risk factor for twice as many minorities as whites (Figure 4). Minority males had a proportion higher than that of white males, but minority females had a proportion almost three times that of white females.

Smoking has been shown to be associated with several leading causes of mortality (1,9,16). According to the NCCS, the percentage of adults who smoke cigarettes has been relatively stable since 1977, with slightly more than one-third reporting they are present smokers (i.e., respondent has ever smoked 100 cigarettes and smokes now) (20). In 1984 a greater proportion of men smoked than women (42.7% vs. 31.6%), and a slightly higher proportion of minorities smoked than whites (37.8% vs. 36%). On the average, minority smokers tended to smoke fewer cigarettes. About 59% of minority smokers, compared to 21% of white smokers, reported smoking less than 15 cigarettes per day.

The percentage of adults in North Carolina who say they **drink alcoholic beverages** (45%) is considerably lower than statistics indicate for the U.S. as a whole, where 73% of all adults say they drink. Males appear more likely than females to be drinkers (57% vs. 36%), but only a slightly higher proportion of whites versus minorities have indicated they drink (46% vs. 41%). From 1983 to 1984 none of the responses on alcohol use varied more than 2 percentage points. (20)

Yet, acute alcohol intoxication is a major contributor to injury and death from accidents and violence, especially for minority males. Using data from a recent SCHS study (21), Table 29 shows the percentage of decedents with a blood alcohol level of 100 mg% or greater by race-sex group. For total accidents, poisonings, and violence, minority males had the highest alcohol involvement at 1.38 times that for white males and 1.70 times that for minority females. This general pattern is also apparent for homicide, motor vehicle accidents, and drowning. For suicide and fire, minority males follow white males in the percentage testing at 100 mg% or greater.

In 1983, 4 out of 10 North Carolinians reported in the NCCS that they never engaged in "**active physical exercise**" and another 30 percent reported that they participated "less than 3 times per week." For these two response categories combined, there were no differences between males and females or whites and minorities; however, females and minorities were slightly more likely than males and whites to report that they never engaged in physical activity.

The BRFS survey defined low levels of physical activity as sedentary lifestyle. In 1985, over half of all North Carolinians over the age of 17 (57.7%) had a sedentary lifestyle. Indians (75.4%) and blacks (68.6%) had a higher risk of sedentary lifestyle than whites (55.4%).

SUMMARY AND DISCUSSION

This study depicts an array of indicators describing the health status and health habits of minority North Carolinians. Compared to minorities in the past, today's minorities are living longer and are healthier. Rates of infant and fetal death, pregnancy (including teenage pregnancy), inadequate prenatal care, and general mortality have declined substantially. Low-weight births and births among high-risk women, though not improved, have at least not worsened. Taken together, the health and average life span of minorities are at levels higher than ever before, improvements due substantially to (i) efforts in the health sector to reduce infections, acute diseases, and infant and maternal mortality and (ii) improvements in the availability, accessibility, and utilization of basic health services (1,9).

FIGURE 3

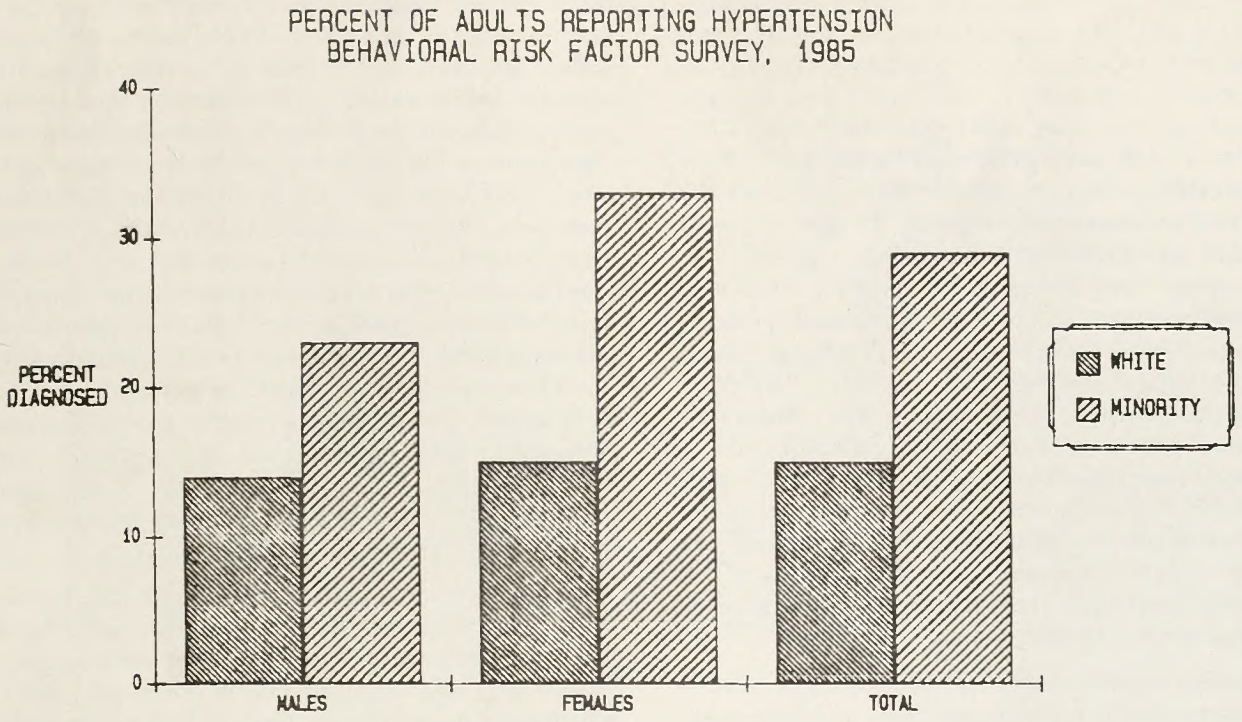
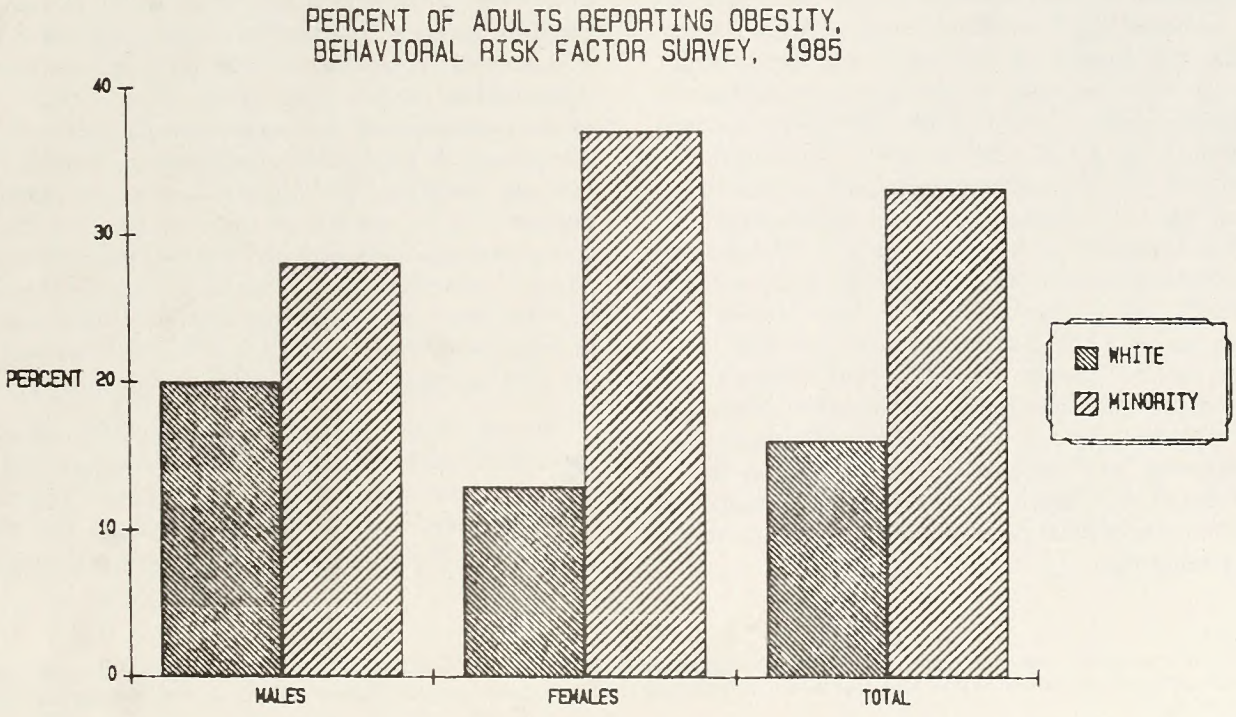


FIGURE 4



But relative to whites, minorities continue to suffer illness and death disproportionately and this disproportionate suffering has not been appreciably altered in the recent past. Unintended pregnancies (as measured by abortions and teenage pregnancies, especially repeat teenage pregnancies) continue to be a major problem in the minority community, with racial gaps recently stabilizing or worsening rather than improving. While reductions have occurred in the minority infant death rate, it is **still** almost twice the white rate. Similarly, while minorities have experienced greater declines in overall mortality than whites in the recent past, they still have death rates at least 40% higher. The major contributors to the disparity are homicides, cancer (particularly prostate, stomach, cervical, and lung cancers), all other accidents, cerebrovascular disease, nephritis/nephrosis, and chronic liver disease/cirrhosis. Using a somewhat conservative definition* of "excess" mortality (i.e., the ratio of the two highest race-sex-specific rates), rates for these causes were at least 50% higher for either minority males or minority females than the next highest rate. Of these two race- sex groups, minority males are clearly the group **most** at risk of excess death and, consequently, **most** in need of interventions to lower this risk.

Although not included in the above listing because of the conservative definition, hypertension and diabetes are significant contributors to the health problems of minorities, although in a different way. Mortality ratios by sex show that minorities are at least twice as likely as whites to die from these causes. However, mortality statistics based on underlying cause of death underestimate the magnitude of these problems because their contribution to other health problems such as heart disease, stroke, and diseases of the kidney and eyes are not quantified. For example, in 1985 hypertension was the underlying cause on 231 death certificates but was mentioned on 4,126 (8% of total certificates). Of certificates with hypertension mentioned on them, heart disease was also mentioned on 79%, atherosclerosis on 31%, and cerebrovascular disease on 30%. Diabetes was the underlying cause on 869 certificates but was mentioned on 4,130 (8% of total). Of these, heart disease was mentioned on 75%, atherosclerosis on 40%, and cerebrovascular disease on 23%. Both diabetes and hypertension were mentioned together on 947 certificates (about 1.8% of total certificates). Consequently, hypertension and diabetes are not themselves major killers based on underlying causes of death but contribute to the severity of other problems which take an excessive toll on minorities.

Given the disproportionate illness and death of minorities, can we account for such disparities? Numerous factors are presumed to influence health, and among these, sociodemographics are believed to be especially significant (1). Minorities tend to be less well educated and to have lower incomes than whites, thereby limiting access to and knowledge of health services and healthy practices. The income problem is exacerbated by the fact that minority families are generally larger than white families and are more likely to be female-headed. Combined with the aforementioned problems, minorities are more likely to be concentrated in urban areas and thus are exposed to a relatively greater number of environmental hazards including pollution, traffic hazards, substandard and overcrowded housing, and crime. Because of the lower levels of education, minorities tend to be relegated to positions that potentially present greater levels of exposure to environmental risks such as physical and mental stressors and toxic substances. Where these socioeconomic factors affect health status, differentials in health can be expected.

The differentials in socioeconomic status raise another issue in accounting for racial disparities in health—that is, the appropriateness of "race" as a comparison variable. The term "race" connotes genetic differences, but in actuality is a more powerful force in determining health not for biological but for social reasons (8). In analyzing race differentials, it would have been preferable to compare affluent whites with affluent minorities and the white poor with the minority poor to better delineate whether the health differentials are due to economic differences. Differential income levels within and among racial groups act as confounding variables and distort any overall racial comparisons. This problem was clearly demonstrated when, using education as a proxy for income, comparisons were made of adequacy of care, low birthweight, and neonatal and postneonatal mortality by race and education. With these indicators, for example, minority health tended to improve significantly as socioeconomic status increased, but the gaps between the minority and white rates widened, illustrating the confounding of income, health status, and race. Unfortunately, in most cases, North Carolina data collection systems do not exist that enable the analysis of data by income.

Yet, even among the limited comparisons of race, education and infant health, the comparability of groups is still an issue. For example, among births under 2500 grams, minorities have had a lower neonatal death rate than whites, regardless of education. One suggested explanation

*This was considered a conservative approach because with some causes, minorities had the two highest race-sex-specific rates. For these causes, while there were significant differences if we compared the minority and white rates by sex, there was little difference when comparing the male and female rates by race.

is that there is a biological role influencing birthweight that gives a different meaning to low birthweight for minorities versus whites (1). If one accepts this explanation, it can then be argued that valid birthweight-specific comparisons by race must be a function of the optimal racial birthweights. For instance, if one assumes the optimal birthweight is 3200 grams for whites and 2800 grams for minorities, then the minority birthweight group corresponding to white births of 2800-3200 grams would be 2400-2800 instead of 2800-3200 grams to adjust for a "biologic" difference. While the specific role of biology in birthweight outcome and the concept of optimal birthweight by race are issues requiring further research, they support the broader picture being portrayed here—that is, the biological comparability of the racial groups may be a factor in the health effects being compared.

Nutritional status and dietary practices, stress and coping patterns, drug and alcohol abuse, appropriate and timely utilization of health services, and sedentary lifestyles are a few of the factors suggested as being contributors to health disparities. The causes of health differentials appear to be multifactorial and to be embedded in a complex interaction of physiological, cultural, psychological, and societal factors that is poorly understood for the general population and even less so for minorities (1). How these factors contribute to the occurrence of disease and whether they contribute differently for white versus minority populations are issues for future research.

Given the complex array of contributing factors, reducing the longstanding disparities will require creative thinking. Based on limited national and state data, many of the risk factors are so disparate between whites and minorities that the availability and accessibility of medical care alone, although playing a significant role in mitigating some of their effects, will not completely offset the disproportionate illness, disability, and death (1). In certain pockets of the state, more and better services and improved access to them are indeed essential. However, successful strategies to minimize the disparities are more likely to emerge from the development of "active" partnerships between health providers and minority communities which capitalize on the resources and strengths of both groups and which elevate the "health consciousness" of the minority community. Creating such partnerships is a major public health challenge.

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TABLE 1

SELECTED HEALTH-RELATED INDICATORS BY RACE

NORTH CAROLINA, 1980 CENSUS

DEMOGRAPHICS	WHITES	BLACKS	AMERICAN INDIANS
Persons:			
Percent living in rural areas	54.5	43.1	77.9
Percent under age 18	26.0	35.0	38.8
Percent 65+	10.9	8.6	5.3
Median age	31.4	24.7	23.1
Percent males	48.8	47.5	49.6
Males per 100 females	95.4	90.4	98.4
Persons aged 5+:			
Percent in same county as in 1975	79.2	85.6	86.2
ECONOMICS			
1) Employed persons 16+, 1979:			
Median Earnings: Males	$12,135	$8,133	$8,227
Females	$ 7,153	$6,062	$5,825
2) Persons:			
Percent below poverty, 1979	10.0	30.4	27.9
Percent below 150% of poverty, 1979	19.9	48.6	47.2
3) Persons in families with female head and no husband present:			
Percent below poverty, 1979	21.6	48.9	52.4
Percent below 150% of poverty, 1979	38.7	69.5	72.4
FAMILY STRUCTURE			
1) Persons per family	3.09	3.80	3.88
2) Percent of families headed by a female	10.5	33.8	20.9
3) Percent headed by female with own children under 18	5.5	20.7	13.2
4) Persons under 18: Percent who have own children in married-couple families	81.6	49.1	66.6

TABLE 2

PREGNANCY RATES* BY RACE

NORTH CAROLINA RESIDENTS

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	71.1	108.4	1.52
1979	74.5	109.8	1.47
1980	73.2	109.2	1.49
1981	71.8	106.0	1.48
1982	72.7	104.6	1.44
1983	72.3	101.1	1.40
1984	73.7	103.0	1.40
1985	74.3	101.1	1.36
% Change 1978-85	+ 4.5%	- 6.7%	- 10.5%

*Number of reported pregnancies (live births, fetal deaths, and abortions) per 1,000 females aged 15-44.

TABLE 3

LIVE BIRTH RATES* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	13.0	20.7	1.59
1979	13.1	20.9	1.60
1980	12.9	19.1	1.48
1981	12.6	18.6	1.48
1982	12.8	18.7	1.46
1983	12.6	17.5	1.39
1984	12.8	17.6	1.38
1985	13.2	17.5	1.33
% Change 1978-85	+ 1.5%	- 15.5%	- 16.4%

*Live births per 1,000 population.

TABLE 4

FERTILITY RATES* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	55.0	80.3	1.46
1979	55.1	79.5	1.44
1980	54.8	77.0	1.41
1981	53.8	74.8	1.39
1982	54.5	75.4	1.38
1983	53.3	70.2	1.32
1984	54.3	69.0	1.27
1985	56.1	69.3	1.24
% Change 1978-85	+ 2.0%	- 13.7%	- 15.1%

*Live births (any age) per 1,000 females 15-44.

TABLE 5

FETAL DEATH RATES* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	8.5	16.4	1.93
1979	8.9	15.4	1.73
1980	8.2	14.7	1.79
1981	8.1	14.5	1.79
1982	8.4	13.2	1.57
1983	7.8	13.8	1.77
1984	7.7	11.3	1.47
1985	7.2	11.8	1.64
% Change 1978-85	- 15.3%	- 28.0%	- 15.0%

*Fetal deaths (stillbirths) per 1,000 deliveries (live births plus fetal deaths).

TABLE 6

ABORTION RATES* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	15.6	26.7	1.71
1979	17.0	28.1	1.65
1980	17.9	31.1	1.74
1981	17.6	30.1	1.71
1982	17.7	28.2	1.59
1983	18.6	29.9	1.61
1984	18.9	33.3	1.76
1985	17.8	30.9	1.74
% Change 1978-85	+ 14.1%	+ 15.7%	+ 1.8%

*Reported abortions (all ages) per 1,000 females aged 15-44.

TABLE 7

ABORTION FRACTION* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	233.5	256.6	1.10
1979	246.1	266.7	1.08
1980	256.9	294.7	1.15
1981	258.6	295.5	1.14
1982	256.6	279.9	1.09
1983	257.1	295.6	1.15
1984	257.0	322.9	1.26
1985	240.0	306.0	1.28
% Change 1978-85	+ 2.8%	+ 19.3%	+ 16.4%

*Reported abortions per 1,000 pregnancies (live births, fetal deaths, and abortions).

TABLE 8

TEENAGE PREGNANCY RATES* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	80.5	139.3	1.73
1979	80.7	137.5	1.70
1980	79.7	132.4	1.66
1981	76.3	125.9	1.65
1982	77.9	125.0	1.60
1983	78.7	127.7	1.62
1984	79.2	132.1	1.67
1985	79.6	130.3	1.64
% Change 1978-85	- 1.1%	- 6.5%	- 5.2%

*Number of reported pregnancies for females aged 15-19 per 1,000 females aged 15-19.

TABLE 9

TEENAGE ABORTION FRACTIONS* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	371.7	252.8	0.68
1979	399.3	275.1	0.69
1980	416.5	309.1	0.74
1981	435.8	302.7	0.69
1982	422.8	288.2	0.68
1983	441.5	326.4	0.74
1984	450.3	357.4	0.79
1985	428.3	351.2	0.82
% Change 1978-85	+ 15.2%	+ 38.9%	- 20.6%

*Number of reported abortions for females aged 15-19 per 1,000 reported pregnancies for females aged 15-19.

TABLE 10

PERCENT OF LIVE BIRTHS WITH ONE OR MORE SOCIODEMOGRAPHIC RISK FACTORS* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	45.2	72.8	1.61
1979	44.6	72.2	1.62
1980	43.9	72.4	1.65
1981	42.9	72.2	1.68
1982	43.4	72.1	1.66
1983	42.6	72.6	1.70
1984	42.9	72.5	1.69
1985	42.8	72.5	1.69
% Change 1978-85	- 5.3%	- 0.4%	+ 5.0%

*Factors include maternal age under 18 or over 34, education under 12 years, out-of-wedlock marital status, parity greater than 3, previous fetal death, and previous live born now dead.

TABLE 11

PERCENT OF MOTHERS RECEIVING INADEQUATE PRENATAL CARE* BY RACE

NORTH CAROLINA

1978 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1978	4.3	13.9	3.23
1979	4.0	12.5	3.13
1980	3.9	12.0	3.08
1981	3.7	11.5	3.11
1982	3.9	10.7	2.74
1983	3.4	11.0	3.24
1984	3.5	10.6	3.03
1985	3.7	10.9	2.95
% Change 1978-85	- 14.0%	- 21.6%	- 8.7%

*Prenatal care rated according to the Kessner Index (11).

TABLE 12

PERCENT OF MOTHERS RECEIVING INADEQUATE PRENATAL CARE* BY RACE AND EDUCATION

NORTH CAROLINA, 1985

EDUCATION	WHITES	MINORITIES	RACE RATIO
< 12 years	9.4	17.3	1.84
12 Years	3.2	9.6	3.00
13-15 Years	1.7	5.8	3.41
16+ Years	0.6	3.0	5.00
TOTAL	3.7	10.9	2.95

*Prenatal care rated according to the Kessner Index (11).

TABLE 13

NUMBER AND PERCENT OF BIRTHS BY BIRTHWEIGHT AND RACE

NORTH CAROLINA, 1985

BIRTHWEIGHT CATEGORIES (GMS)	WHITES		MINORITIES	
	NUMBER	PERCENT	NUMBER	PERCENT
< 1000	328	0.5	401	1.5
1000-1499	324	0.5	308	1.1
1500-2499	3,027	4.9	2,660	9.6
2500-3999	50,277	81.4	22,724	82.3
4000+	7,786	12.6	1,518	5.5
TOTAL	61,766	100.0	27,625	100.0

TABLE 14

PERCENT OF BIRTHS UNDER 2500 GRAMS BY RACE AND EDUCATION

NORTH CAROLINA 1978 - 1985

EDUCATION	RACE	1978	1979	1980	1981	1982	1983	1984	1985
< 12 Years	White	8.5	8.6	8.6	8.5	8.6	8.6	8.6	8.4
	Minority	13.5	14.1	13.6	14.2	13.2	13.9	13.5	14.0
12 Years	White	5.9	6.1	5.7	5.7	5.8	5.6	5.8	5.9
	Minority	10.9	10.9	11.0	11.2	11.7	11.8	11.4	12.0
13-15 Years	White	4.9	4.8	4.5	4.7	5.2	4.9	5.4	5.0
	Minority	9.9	10.9	10.6	9.3	11.4	10.2	9.8	10.7
16+ Years	White	4.5	4.2	4.7	4.4	4.0	4.4	4.6	4.4
	Minority	8.5	9.3	9.6	8.2	9.8	9.2	9.4	9.7
TOTAL	White	6.3	6.3	6.1	6.0	6.0	5.9	6.1	6.0
	Minority	11.8	12.1	11.8	11.8	12.1	12.1	11.7	12.2

TABLE 15

NUMBER AND PERCENT OF WOMEN ON WIC* WHO REPORTED SMOKING BY RACE AND AGE

NORTH CAROLINA, 1985

	WHITES		MINORITIES	
AGE	NUMBER	PERCENT	NUMBER	PERCENT
< 20	1023	39.9	458	13.4
20-24	1643	45.4	1067	25.0
25-29	672	42.4	581	27.5
30+	271	39.0	258	24.6
TOTAL	3609	42.7	2364	21.8

*Women, Infants and Children Program, a supplemental food program for low-income women and their children.

TABLE 16

NUMBER AND PERCENT OF LOW-WEIGHT BIRTHS* AMONG WOMEN ON WIC BY SMOKING STATUS, RACE, AND AGE

NORTH CAROLINA, 1985

	SMOKING = YES		SMOKING = NO	
RACE/AGE	NUMBER	PERCENT	NUMBER	PERCENT
WHITE				
< 20	102	10.0	88	5.7
20-24	135	8.2	93	4.7
25-29	64	9.5	30	3.3
30+	28	10.3	31	7.3
TOTAL	329	9.1	242	5.0
MINORITY				
< 20	61	13.3	291	9.9
20-24	165	15.5	296	9.2
25-29	81	13.9	137	8.9
30+	62	24.0	74	9.4
TOTAL	369	15.6	798	9.4

*Births under 5 lbs. 8 oz.

TABLE 17

INFANT MORTALITY RATES* BY RACE

NORTH CAROLINA, 1970 - 1985

YEAR	WHITES	MINORITIES	RACE RATIO
1970	19.2	35.8	1.86
1971	17.7	32.0	1.81
1972	18.2	32.4	1.78
1973	18.1	29.8	1.65
1974	16.4	26.0	1.59
1975	14.7	26.6	1.81
1976	14.9	24.0	1.61
1977	12.2	23.3	1.91
1978	13.1	23.9	1.82
1979	11.2	23.3	2.08
1980	12.1	19.4	1.60
1981	10.7	18.3	1.71
1982	10.9	19.6	1.80
1983	10.5	19.1	1.82
1984	10.0	18.2	1.82
1985	9.5	17.5	1.84
% Change 1970-85	- 50.5%	- 51.1%	- 1.1%

*Deaths under 1 year per 1,000 live births.

TABLE 18

NEONATAL DEATHS AND DEATH RATES BY RACE AND EDUCATION

NORTH CAROLINA, 1980-84

AGE	WHITES NUMBER	WHITES RATE	MINORITIES NUMBER	MINORITIES RATE	RACE RATIO
< 12 Years	635	9.4	625	13.3	1.41
12 Years	805	6.9	764	12.9	1.87
13-15 Years	336	6.2	247	13.0	2.10
16+ Years	263	5.3	114	12.2	2.30
TOTAL	2,064	7.1	1,769	13.1	1.85

*Deaths under 28 days per 1,000 live births.

TABLE 19

BIRTHWEIGHT-SPECIFIC NEONATAL DEATHS AND DEATH RATES* BY RACE, NORTH CAROLINA 1980-84

	WHITES		MINORITIES		RACE
BIRTHWEIGHT	NUMBER	RATE	NUMBER	RATE	RATIO
< 1500	1161	401.5	1288	382.8	0.95
1500-2499	329	22.6	188	14.8	0.65
2500+	541	2.0	255	2.1	1.05
TOTAL	2064	7.1	1769	13.1	1.85

*Deaths under 28 days in specified birthweight category per 1,000 births in birthweight category.

TABLE 20

NEONATAL MORTALITY RATES[1] BY RACE, EDUCATION AND BIRTHWEIGHT FOR THREE FIVE-YEAR INTERVALS

NORTH CAROLINA

		1970-74		1975-79		1980-84	
EDUCATION	BIRTHWEIGHT	WHITES	MINORITIES	WHITES	MINORITIES	WHITES	MINORITIES
< 12	< 1500	609.1	556.4	510.5	445.2	410.7	358.8
	1500-2499	61.3	36.9	35.0	23.3	19.1	13.7
	2500+	4.4	5.3	3.0	3.0	2.5	2.2
12	< 1500	653.0	568.8	502.4	488.0	395.9	381.3
	1500-2499	61.3	35.6	38.7	22.4	25.8	16.5
	2500+	3.5	3.8	2.4	3.0	1.9	2.2
13-15	< 1500	648.3	560.0	596.5	460.3	391.2	432.1
	1500-2499	57.5	42.3	45.8	15.8[2]	21.9	10.7[2]
	2500+	3.3	3.1	2.5	2.3	1.9	1.9
16+	< 1500	698.5	565.2	539.5	338.3	391.9	396.2
	1500-2499	47.7	33.2[3]	33.2	20.1[3]	21.8	18.5[3]
	2500+	3.3	3.2[3]	2.0	3.2[2]	1.6	1.8[2]
TOTAL	< 1500	636.3	564.2	523.5	460.0	401.5	382.8
	1500-2499	60.2	36.8	37.7	22.4	22.6	14.8
	2500+	3.8	4.6	2.5	3.0	2.0	2.1

[1]Deaths under 28 days per 1,000 live births.

[2]Based on 15 to 19 deaths.

[3]Based on 9 to 13 deaths.

TABLE 21

NEONATAL DEATH RATIOS* BY EDUCATION AND BIRTHWEIGHT FOR THREE FIVE-YEAR INTERVALS

NORTH CAROLINA

EDUCATION	BIRTHWEIGHT CATEGORIES	1970-74	1975-79	1980-84
<12	< 1500	.91	.87	.87
	1500-2499	.60	.67	.72
	2500+	1.20	1.00	.88
12	< 1500	.87	.97	.96
	1500-2499	.58	.58	.64
	2500+	1.09	1.25	1.16
13-15	< 1500	.86	.77	1.10
	1500-2499	.74	.34	.49
	2500+	.94	.92	1.00
16+	< 1500	.81	.63	1.01
	1500-2499	.70	.61	.85
	2500+	.97	1.60	1.13
TOTAL	< 1500	.89	.88	.95
	1500-2499	.61	.59	.65
	2500+	1.21	1.20	1.05

*Ratio of minority to white neonatal mortality rates.

TABLE 22

POSTNEONATAL MORTALITY RATES[1] BY RACE AND EDUCATION FOR THREE FIVE-YEAR INTERVALS

NORTH CAROLINA

EDUCATION	YEAR	WHITES	MINORITIES	RACE RATIO
	1970-74	6.3	13.4	2.13
< 12	1975-79	5.3	11.4	2.15
	1980-84	6.6	8.8	1.33
	1970-74	2.8	7.0	2.50
12	1975-79	3.0	5.3	1.77
	1980-84	2.8	5.5	1.96
	1970-74	2.2	3.5	1.59
13-15	1975-79	2.2	4.1	1.86
	1980-84	2.2	4.1	1.86
	1970-74	1.3	2.7[2]	2.08
16+	1975-79	1.4	2.8[2]	2.00
	1980-84	1.6	1.8[2]	1.13
	1970-74	3.8	9.9	2.61
TOTAL	1975-79	3.3	7.7	2.33
	1980-84	3.3	6.2	1.88

[1]Deaths 28 days to 1 year per 1,000 neonatal survivors.

[2]Based on 12-18 deaths.

TABLE 23

POSTNEONATAL MORTALITY RATES* BY BIRTHWEIGHT AND RACE FOR THREE FIVE-YEAR INTERVALS

NORTH CAROLINA

BIRTHWEIGHT CATEGORIES	YEAR	WHITES	MINORITIES	RACE RATIO
< 1500	1970-74	37.5	56.3	1.50
	1975-79	55.9	70.5	1.26
	1980-84	60.1	74.6	1.24
1500-2499	1970-74	13.4	20.1	1.50
	1975-79	9.4	15.6	1.66
	1980-84	11.5	12.6	1.10
2500+	1970-74	3.1	8.1	2.61
	1975-79	2.7	5.9	2.19
	1980-84	2.5	4.4	1.76
TOTAL	1970-74	3.8	9.9	2.61
	1975-79	3.3	7.7	2.33
	1980-84	3.3	6.2	1.88

*Deaths 28 days to 1 year per 1,000 neonatal survivors.

TABLE 24

CAUSE-SPECIFIC NEONATAL DEATHS AND DEATH RATES* BY RACE, NORTH CAROLINA, 1980-84

UNDERLYING CAUSE OF DEATH	WHITES		MINORITIES	
	NUMBER	RATE	NUMBER	RATE
Conditions in Perinatal Period	1,215	420.4	1,304	966.3
Congenital Anomalies	607	210.0	255	189.0
Sudden Infant Death Syndrome	31	10.7	22	16.3
Nephritis/Nephrosis	12	4.2	6	4.4
Accidents	7	2.4	11	8.2
Heart Disease	10	3.5	4	3.0
Hernia of Abdominal Cavity	10	3.5	3	2.2
Pneumonia/Influenza	8	2.8	11	8.2

*Deaths under 28 days per 100,000 live births.

TABLE 25

CAUSE-SPECIFIC POSTNEONATAL DEATHS AND DEATH RATES* BY RACE, NORTH CAROLINA, 1980-84

UNDERLYING CAUSE OF DEATH	WHITES		MINORITIES	
	NUMBER	RATE	NUMBER	RATE
Sudden Infant Death Syndrome	349	121.6	325	244.0
Congenital Anomalies	165	57.5	81	60.8
Conditions In Perinatal Period	55	19.2	62	46.5
Accidents	49	17.1	50	37.5
Infectious and Parasitic Diseases	45	15.7	51	38.3
Heart Disease	46	16.0	48	36.0
Hereditary/Degenerative Dis. of Cent. Nervous System	28	9.8	11	8.3
Inflammatory Diseases of Central Nervous System	25	8.7	20	15.0
Pneumonia/Influenza	24	8.4	32	24.0

*Deaths 28 days to 1 year per 100,000 neonatal survivors.

TABLE 26

EXCESS MORTALITY FOR MINORITY MALES

NORTH CAROLINA 1981-85

GROUP	UNDERLYING CAUSE OF DEATH	1981-85 AGE-ADJUSTED RATE*
I	Homicide	36.1
	Prostate Cancer	32.0
	Stomach Cancer	10.2
II	All Other Accidents	49.5
	Pneumonia/Influenza	27.7
	Chronic Liver Disease/Cirrhosis	17.3
III	Total Cancer	217.7
	Cerebrovascular Disease	82.5
	Nephritis/Nephrosis	14.4
	Pancreatic Cancer	11.3
	Hypertension	7.3
	Atherosclerosis	6.7
IV	Total Heart Disease	311.4
	Trachea, Bronchus, and Lung Cancer	71.0
	Motor Vehicle Accidents	40.1
	Colon, Rectum, and Anus Cancer	16.1
V	Other Ischemic Heart Disease	76.9
	Leukemia	6.3

GROUP I - Exceeds next highest race-sex rate by 152-285 percent.

GROUP II - Exceeds next highest race-sex rate by 50-86 percent.

GROUP III - Exceeds next highest race-sex rate by 30-42 percent.

GROUP IV - Exceeds next highest race-sex rate by 12-22 percent.

GROUP V - Exceeds next highest race-sex rate by 5-6 percent.

*Deaths per 100,000 population, computed by the direct method using 10-year age groups and the U.S. 1940 total population as the standard.

TABLE 27

RACE RATIOS[1] BY SEX FOR DEATHS PRIOR TO AGE 45 AND FOR ALL AGES BY CAUSE OF DEATH

NORTH CAROLINA, 1981-85

UNDERLYING CAUSE	MALES		FEMALES	
	Risk Prior To Age 45	Risk For All Ages	Risk Prior To Age 45	Risk For All Ages
Heart Disease	2.13	1.13	2.75	1.41
Acute Myocardial Infarction	1.41	0.84	2.11	1.15
Other Ischemic Heart Disease	1.70	1.06	2.00	1.24
Hypertension	41.68[2]	3.65	6.17[2]	4.00
Cerebrovascular Disease	4.52	1.97	3.17	1.76
Atherosclerosis	0.51[3]	1.34	0.00	1.26
Cancer	1.37	1.40	1.19	1.15
Stomach	2.73[2]	2.76	2.44[2]	2.00
Colon/Rectum/Anus	0.88	1.15	1.00	1.35
Pancreas	1.37[2]	1.41	1.68[2]	1.54
Trachea/Bronchus/Lung	1.72	1.16	1.22	0.69
Female Breast	-	-	1.25	1.10
Cervix	-	-	2.38	2.89
Ovary	-	-	0.69[2]	0.83
Prostate	1.40[3]	2.52	-	-
Leukemia	1.12	1.05	0.90	0.88
Diabetes	2.66	1.93	1.95	2.82
Pneumonia/Influenza	4.23	1.58	2.44	1.25
Chronic Obst. Pul. Disease	3.88	0.75	2.87	0.57
Chronic Liver Disease/Cirrhosis	2.72	1.50	5.42	1.98
Nephritis/Nephrosis	3.32	2.72	1.47	3.06
Motor Vehicle Accident	1.07	1.21	0.79	0.88
All Other Accidents	1.80	1.85	2.14	1.90
Suicide	0.48	0.44	0.40	0.34
Homicide	4.15	4.15	3.42	3.24
TOTAL	1.81	1.40	1.75	1.45

[1]Ratio of minority to white age-adjusted rates.

[2]Based on less than 20 white or minority deaths.

[3]Based on less than 20 deaths for both whites and minorities.

TABLE 28

SELECTED REPORTABLE COMMUNICABLE DISEASES[1] AND CASE RATES[2] BY RACE, NORTH CAROLINA 1985

DISEASE CATEGORY	WHITES NUMBER	WHITES RATE	MINORITIES NUMBER	MINORITIES RATE
Hepatitis, A	89	1.9	25	1.6
Hepatitis, B	353	7.5	248	15.7
Hepatitis, Non-A, Non-B	64	1.4	18	1.1
Hepatitis Type Unspecified	59	1.3	16	1.0
Meningitis, Aseptic	161	3.4	74	4.7
Meningitis, H. Influenzae	111	2.4	57	3.6
Meningitis, Pneumococcus	29	0.6	20	1.3
Meningococcal Infection	50	1.1	15	1.0
Rocky Mountain Spotted Fever	126	2.7	16	1.0
Salmonellosis	707	15.1	345	21.9
Shigellosis	50	1.1	26	1.6
Whooping Cough	27	0.6	13	0.8
Tuberculosis, Verified Cases	243	5.2	426	27.0
Syphilis, All Stages	248	5.3	1,390	88.1
Gonorrhea, All Sites	5,691	121.7	33,471	2,121.5
Nonspecific Urethritis	2,792	59.7	6,217	394.1

[1]Diseases are included if there were at least 40 total cases in 1985.

[2]Cases per 100,000 population.

TABLE 29

MEDICAL EXAMINER DEATHS AGES 15 AND OVER DUE TO NON-NATURAL CAUSES THAT WERE TESTED FOR BLOOD ALCOHOL: PERCENT WITH A LEVEL OF 100 mg% OR GREATER BY RACE-SEX GROUP

NORTH CAROLINA, 1980-84

RACE-SEX GROUP	TOTAL ACCIDENTS INJURY, AND POISONING	HOMICIDE	SUICIDE	MOTOR VEHICLE ACCIDENTS	DROWNING	FIRE
White Male	38.0	43.6	25.1	48.1	36.8	66.3
White Female	20.5	13.8	15.4	21.3	29.5	35.0
Minority Male	52.3	58.5	21.9	54.6	46.5	63.4
Minority Female	30.8	30.1	7.8	26.4	18.5	34.9

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